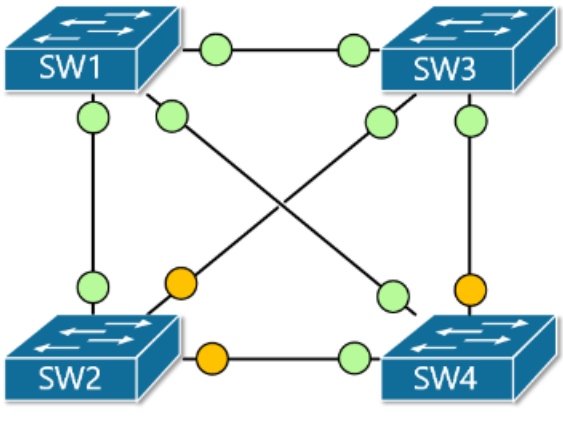
Need of STP:

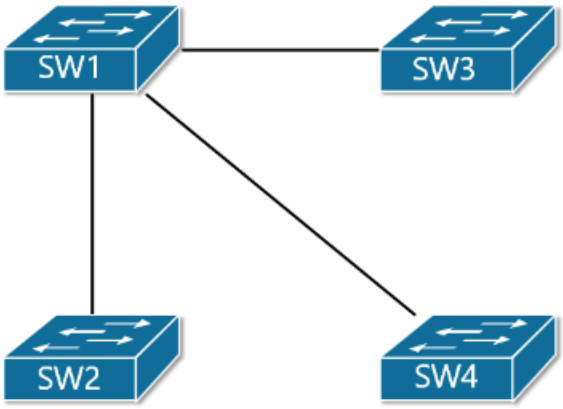
For a good network design and to ensure network availability, some extra links are added to the network. If any active link fails, then traffic shifts to these redundant links. It means these links are used for backup purpose. The process of adding extra links is known as network redundancy.

STP is a link management protocol designed to support redundant links that stops switching loops in the STP network. It is a Layer 2 protocol that runs on bridges and switches, which should be enabled on the switch interfaces. The Spanning-Tree Protocol is used to create a loop-free logical topology from a physical topology that has loops. Spanning trees use an algorithm to search for the redundant links in the LAN and select the best paths. It is mainly used to put all links in either forwarding or blocking. After this process, all the links without a redundant link is likely to be in the forwarding state. The redundant links that were not as good as the selected links would be blocking. Spanning Tree never uses multiple links to the same destination. There is no load-sharing feature with Spanning Tree.

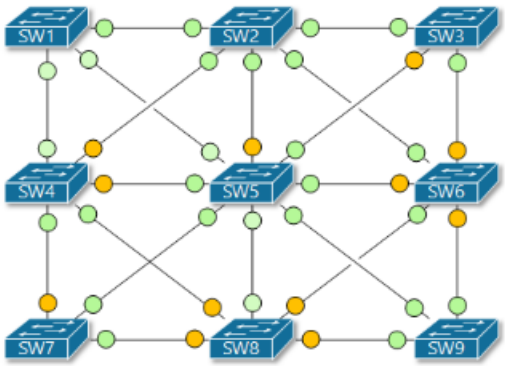
STP prevents layer 2 loops by placing redundant ports in a blocking state. These extra links acts as a backup that can enter in a forwarding state if an active interface fails.



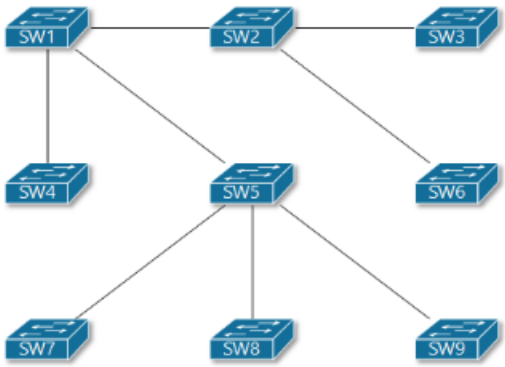
Physical Topology



Logical Topology



Physical Topology



Logical Topology